

Fattening the Thin Horse

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Horses may lose condition due to varying reasons: overwintering on poor pasture, low quality rations, neglect, dental problems, metabolic disturbances and diseases. If the horse is emaciated, a veterinary examination is recommended. If you are looking to increase condition on a healthy, but thin horse, then this can be easily achieved by feeding adequate amounts of a nutrient dense, highly digestible feed, steam-extruded feed.

Steam extruded feeds have several significant advantages over their more traditional counterparts, sweet feeds and pellets. Firstly, because steam-extruded nuggets are about twice as large and half as dense as a museli mix or pellet made with the same ingredients, it takes most horses up to 32% longer to eat their feed. Slower eating and longer chewing time helps satisfy the grazing urge and minimizes wood, fence and tail chewing. Horses are also less likely to bolt their feed and be at risk for choke and colic.

Superior digestibility of steam-extruded feeds helps horses extract more energy from less feed. The overall digestibility of steam-extruded feeds is higher than grains, sweet feeds, or pellets. In one study at the University of Florida in the 1980s, horses fed steam-extruded feeds showed 18.5% better feed conversion efficiency than horses on a pelleted feed.

Horses that are hard to keep and older horses benefit from the increased nutrient availability of a steam-extruded feed. Mitavite ECONOMIX, BREEDA, GUMNUTS and PROMITA are steam extruded complete feeds, formulated and prepared to bring the benefits of steam-extrusion into the feedbin. Because of the longer chew time and better feed utilization, many owners find they can feed up to 30% less steam-extruded feed than pellets or museli feed and get the same benefits. But, how much to feed to increase body condition?

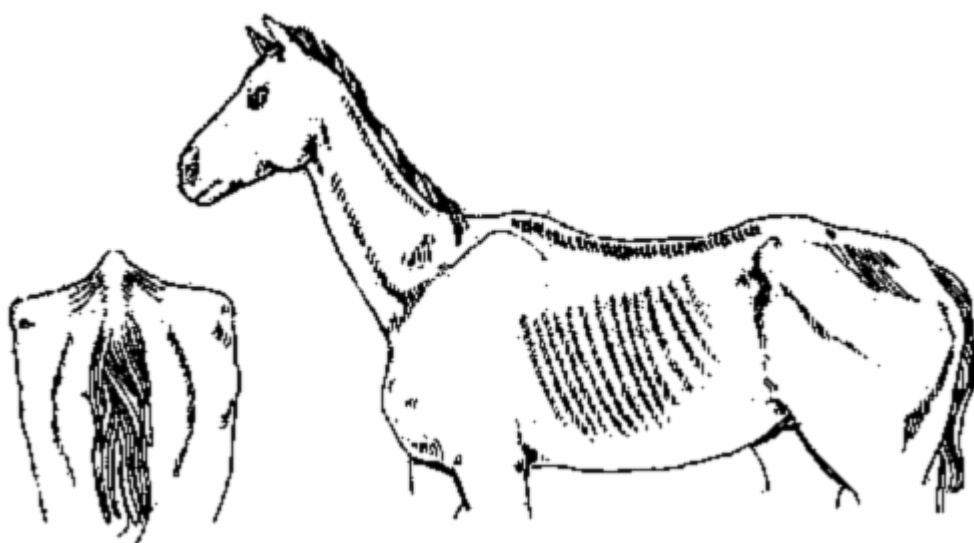
Assessment of Body Condition

Firstly, an assessment of body condition should be made. There are charts for calculating body condition score. Some range from 0 to 5, with 0 being very poor and 5, very fat. Others range from 0 to 10. The charts below show how to estimate a horse's body condition score.

CONDITION SCORE

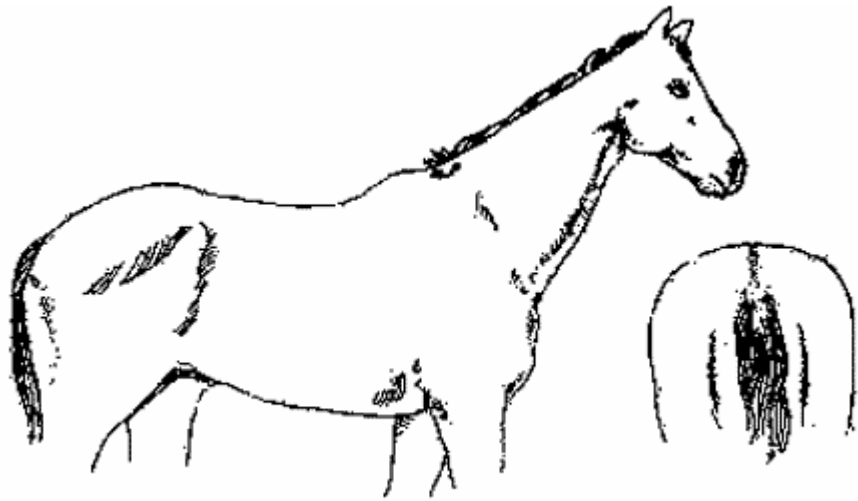
0 VERY POOR

6 GOOD



- Very sunken rump
- Deep cavity under tail
- Skin tight over bones
- Very prominent backbone & pelvis
- Narrow, very thin ewe neck

- Firm neck
- Rounded rump
- Ribs just covered but easily felt
- Withers and spine bones covered



- Very bulging rump
- Deep central gutter along back
- Ribs and spine buried
- Tight, thick neck and a prominent crest
- Folds and lumps of fat

Adapted from PJ Huntington

CONDITION SCORING	
SCORE*	CONDITION
1	POOR: emaciated, backbone, ribs and tailbase protrude. Bones in neck, shoulder and withers visible, no fat can be felt or seen, ewe neck, skin tight
2	VERY THIN: Sunken rump, slight fat over backbone, ribs and tail base prominent, bones of withers, shoulders and neck faintly visible
3	THIN: Some fat over vertebrae, withers, shoulder, neck, ribs and tail base easily discernable but individual vertebrae can't be seen, ewe neck.
4	MODERATELY THIN: Faint outline of ribs, some fat around tail base, withers, shoulders and neck not obviously thin, neck narrow.

5	MODERATE: Back is level, ribs can be felt, but not seen, fat around tail base, withers, shoulders and neck blend smoothly with body.
6	MODERATE TO FLESHY: Slight crease down back, fat over ribs and tail base, behind shoulders, along side of withers and neck, but no crest.
7	FLESHY: Deeper crease down back, can feel but not see ribs, fat deposited along withers, neck and behind shoulders, slight crest
8	FAT: Prominent crease down back, can't feel ribs, wither and shoulder area filled with fat, thickening of neck, fat inside hide legs.
9	EXTREMELY FAT: Deep crease along back, patches of fat over ribs bulging fat over flank and neck; back legs may rub together, crested neck.

*Adapted from Nenneke, Potter and Kreider (1981)

For practical purposes it is necessary to know how much weight gain is required to increase body condition to the appropriate condition score for example, from a 4 to a 5, and how much feed is necessary to accomplish this.

The Nutrient Requirements of Horses states that an increase in condition score can be achieved if energy intake is increased by 10-15%. However, recent studies have found that this recommendation may not be realistic in many situations. The amount of energy required to achieve a 1kg increase in body weight depends upon 2 things:

- the composition of the gain (ie, muscle or fat) and
- the composition of the diet.

In addition, the amount of energy required per kg of weight gain increases with age. Weight gains of 33kg to 45kg result in an increase in condition score of 2 units (ie, a 4 to a 6).

The following table shows the amount of energy, over and above maintenance requirements, needed to increase the condition score from 4 to 5 over different periods of time.

ESTIMATED INCREASE IN ENERGY NEEDED TO INCREASE CONDITION SCORE FROM 4 TO 5	
TIME TO ACHIEVE GAIN	DAILY ENERGY ABOVE MAINTENANCE NEEDS (MJ)
2 Months	22-28
3 Months	15-19
4 Months	12-13.5
5 Months	8.8-11.3
6 Months	7.5-9.2

How do you increase energy?

Energy can be provided in the diet in the form of carbohydrates and oils. Protein can be used as a form of energy if provided in excess of the needs of the horse. However, using protein to increase energy intake is expensive, inefficient and produces heat, ammonia and gas during digestion.

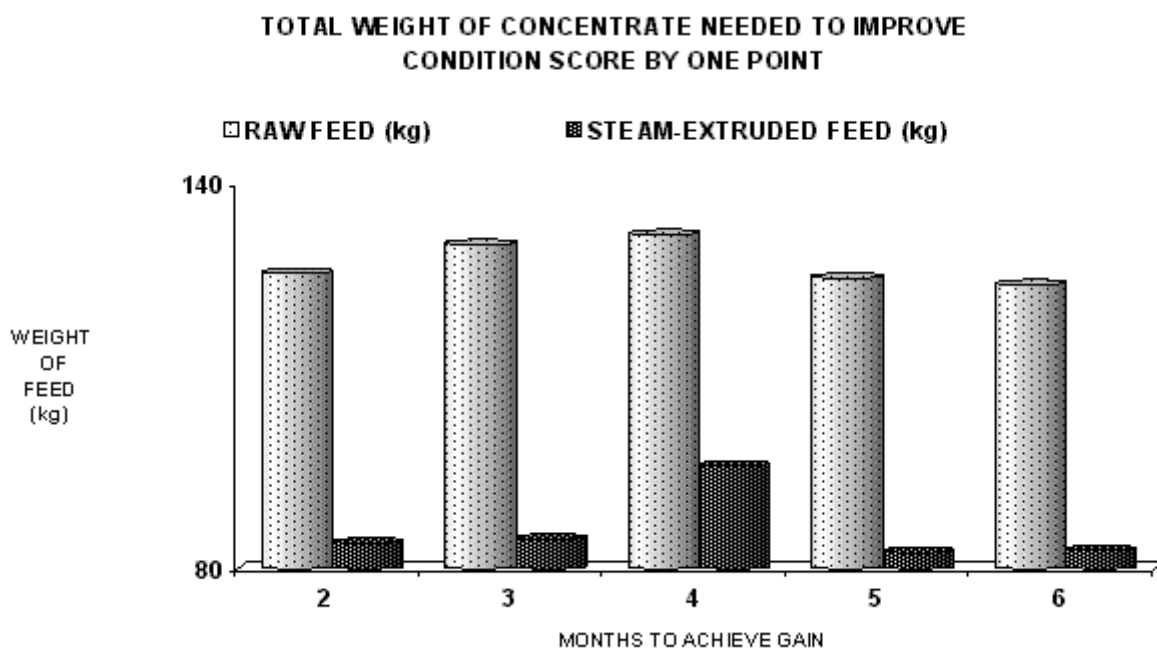
Increasing 'fat' can usually be achieved by increasing calorie intake (and don't we know!). To increase 'cover', energy intake can be increased above what is required for maintenance. To avoid digestive disturbances and laminitis, this should be done gradually and with correct dietary management. To obtain maximum benefit from the feed and increase the safety of altering energy intake, the energy should be provided in a form which is digested primarily in the small intestine. Non-fibrous carbohydrates and oils are digested in the small intestine and the thin horse obtains benefit from hard feed which is highly digestible in the small intestine.

Mitavite produce steam-extruded and micronized feeds which are primarily digested in the small intestine. 90% of steam-extruded feeds are digested in the small intestine compared to raw grains. Only 21% of barley, 29% of corn and 65% of oats is digested in the small intestine, the balance is fermented in the large intestine. Mitavite steam-extruded and micronised feeds also help horses extract more energy from less feed and can be dampened to a mash to aid horses with dental problems. Mitavite Breeda is a high-energy, highly digestible feed which would benefit horses which need to increase condition.

How much should my horse be eating each day?

When you calculate the amount of feed your horse requires each day, a good rule of thumb is to feed 2-2.5% of their body weight in feed. Thus, a 500kg horse would need approximately 10kg of feed per day (this includes feed obtained at pasture). To increase weight it may be necessary to feed up to 3% of bodyweight. If however a nutrient-dense highly digestible feed such as Mitavite Breeda is fed then less feed is required and this increased feed conversion efficiency is one of the major advantage of steam-extruded feeds.

When substituting feeds such as pellets, raw grains and sweet feeds with steam-extruded feed, one dipper of pellets is replaced with one dipper of steam-extruded feed. Because steam-extruded feeds are lower in density, the weight per dipper is approximately 2/3 the weight of the same volume of raw feed, so a lower weight of steam-extruded feed is required to produce the same weight gain. The following table shows the total weight of raw (pelleted, sweet feeds and grains) or steam-extruded feed necessary to increase body condition score by one point.



Pasture Levels - What should I do when pasture levels drop?

Some horses tend to drop condition over winter. When feeding a horse whose ration is partly pasture it is necessary to monitor pasture levels, if these drop compensate with another form of roughage such as chaff or hay. When pasture levels increase the amount of hay or chaff fed can be reduced.

Maintenance Program

A regular worming program and teeth check-ups should be incorporated into your horses maintenance program to ensure you achieve maximum benefit from the feed. Any changes to your horses diet should be introduced gradually over a two to three week period. Any changes in manure & appetite should be monitored.

Timing of feeds - When to feed and how often.

Horses have small stomachs so to enhance digestion, small feeds should be fed and often. If over 6kg of concentrate is required for weight gain then splitting your ration into a minimum of three feeds per day will help to improve digestion of the feed in the small intestine. Absorption in the small intestine is also improved when the

concentrate is fed 2 hours before the roughage.

Protein Digestion

Increased digestion in the small intestine is also important for protein assimilation. Protein must be digested in the small intestine to release amino acids. If it passes through to the large intestine, the amino acids ferment to ammonia. This renders them useless and increases the workload on the liver and kidneys in excreting the ammonia from the unusable protein. In addition, loss of essential amino acids causes the horse to lose muscle strength, tone and condition.

Feeding Oils

Feeding a high energy dense feed which is digested in the small intestine increases the energy obtained by the horse. Oils are excellent sources of dense energy and are an ideal way to increase the condition of a horse. Horses can handle up to 1500ml per day. Using high oil feeds and then top-dressing with extra oil as required, allows a degree of control over energy intake as work levels change. It takes about 3 weeks for the digestive system to fully absorb added oils and about 3 weeks for the muscles to fully utilize oil as an energy supply.

Oils offer many benefits:

1. Increase condition when fed above normal energy requirements,
2. Grain intakes can be reduced,
3. Oil is a cool energy supply,
4. The working muscles use oil instead of blood glucose
5. If Omega 3 oils are fed, red blood cell membranes become more supple and flexible, improving circulation and oxygen delivery and inflammatory responses are dampened.

How can I improve the look of my horse?

Oils produced by the skin coat the hairs, causing them to lie flat and shine, repelling water and inhibiting the growth of harmful microorganisms. The use of harsh shampoos should be avoided as they strip the natural oils and dry skin is more prone to invasion by bacteria and parasites. Natural protein-based conditioners and brighteners containing silicone shine the coat, without removing oils. However, no amount of grooming or conditioning will compensate for hair that is not healthy to begin with.

Several trace minerals and vitamins are important for skin and coat health. A dry, lusterless or long, scruffy coat can also be due to vitamin A excess or deficiency and protein deficiency. Fatty acids are needed for production of skin oils and fat-soluble vitamins. They also play a vital role in the immune system and sensitivity to allergies. Diets deficient in Omega 3 fatty acids increase the risk of allergies and dermatitis. In both human and veterinary medicine, many skin conditions including Queensland itch and allergic dermatitis are treated with **Omega 3** oil supplements.

The advent of steam-extrusion has enabled the inclusion of high oil levels in complete feeds. With older methods of processing, such as pelleting, oil could not be included at more than about 4 - 5%.

By using energy dense feeds such as steam-extruded and micronised feeds, digestion in the small intestine is enhanced, less heat, acid and gas is produced, a greater amount of nutrients can be absorbed and higher amounts of oils can be added to the ration. All of these factors can aid in improving the condition score of your horse.